

WHAT IS CLAIMED IS:

1. A video image stabilization system comprising:  
a camera including an image capturing device configured to capture a video image, said camera having a selectively adjustable field of view; and  
at least one processing device operably coupled to said system wherein said processing device receives signals indicative of the field of view of said camera and images captured by said camera, said processing device sequentially grabbing a first one of said images and a second one of said images, said processing device determining a stabilizing adjustment for the video image as a function of an intended change in the field of view of said camera during an interval between the capture of said first image and said second image based upon said signals indicative of the field of view and an analysis of said first and second images.
2. The video image stabilization system of claim 1 wherein a display portion of each image captured by said camera is selected for display, said selected display portion of each image comprising less than the entire captured image and wherein said stabilizing adjustment determined by said processing device comprises adjusting a relative location of said selected display portion within said captured image.
3. The video image stabilization system of claim 1 wherein said camera has a selectively adjustable pan position, a selectively adjustable tilt position and a selectively adjustable focal length.
4. The video image stabilization system of claim 3 wherein at least one of the pan position and the tilt position of said camera is intentionally adjusted between the capture of said first and second images.
5. The video image stabilization system of claim 3 wherein the focal length of said camera is intentionally adjusted between the capture of said first and second images.
6. The video image stabilization system of claim 5 wherein said analysis of said first and second images includes transforming one of said first and second images wherein the scale of the one image is adjusted.
7. The video image stabilization system of claim 1 wherein said analysis of said first and second images includes aligning one of said first and second images with the other of said first and second images based upon said signals indicative of the field of view

and determining if said aligned images indicate the occurrence of unintentional camera movement.

8. The video image stabilization system of claim 7 wherein determining if said aligned images indicate the occurrence of unintentional camera movement comprises determining an image difference of said aligned images.

9. The video image stabilization system of claim 8 further comprising generating a histogram of said image difference of said aligned images and determining whether unintentional camera movement has occurred based upon identifying a maximum peak in said histogram and a location of said maximum peak.

10. The video image stabilization system of claim 9 wherein when said maximum peak is not substantially centered on zero, unintentional motion is determined to have occurred and wherein determination of said stabilizing adjustment includes identifying adjustments that minimize said image difference.

11. The video image stabilization system of claim 1 wherein said signals indicative of the field of view comprise pan, tilt and focal length settings of said camera for each captured image, said signals being communicated to said processing device from said camera on an image-synchronized basis.

12. The video image stabilization system of claim 1 wherein said camera is moveably mounted on a stationary support.

13. A video image stabilization system comprising:

a video camera including an image-capturing device configured to capture images, each captured image associated with a field of view, said camera having at least one selectively adjustable parameter wherein adjustment of said at least one camera parameter varies the field of view of said camera;

a display device configured to display a selected portion of images captured by said camera; and

a processing device operably coupled to said camera and to said display device wherein said processing device receives signals indicative of said at least one camera parameter and images captured by said camera, said processing device being operable to compensate for inadvertent movement of said video camera by adjusting the selected portion of the images displayed by said display device based upon the signals indicative of said at least one camera parameter and an analysis of a current captured image and a previously captured image.

14. The video image stabilization system of claim 1 wherein said signal indicative of at least one camera parameter includes a signal indicative of pan, tilt and zoom settings.

15. The video image stabilization system of claim 1 wherein the selected portion of the video image comprises a central portion of the video image.

16. The video image stabilization system of claim 1 wherein the selected portion of the video image includes approximately between 60% and 90% of the video image.

17. A method of stabilizing a video image, said method comprising:  
capturing a plurality of images with a video camera, the video camera being mounted on a stationary support and having an adjustable field of view;  
adjusting the field of view of the camera;  
grabbing a first image and a subsequent second image captured by the video camera;  
displaying a selected display portion of each of the first and second images, the selected display portion of each image being less than the entire captured image; and  
determining a stabilizing adjustment for the second image as a function of an intended change in the field of view of the camera during an interval between the capture of the first image and the capture of the second image and an analysis of the first and second images wherein the stabilizing adjustment involves adjusting a relative location of the selected display portion within the second image.

18. The method of claim 17 wherein the camera defines a pan position and a tilt position and at least one of the pan position and the tilt position of the camera is intentionally adjusted between the capture of said first and second images.

19. The method of claim 17 wherein a focal length of the camera is intentionally adjusted between the capture of said first and second images.

20. The method of claim 19 wherein the analysis of the first and second images includes transforming one of the first and second images wherein the scale of the one image is adjusted.

21. The method of claim 17 wherein the analysis of the first and second images includes aligning one of the first and second images with the other of the first and second images based upon signals indicative of the field of view received from a system in operative communication with the camera and determining if the aligned images indicate the occurrence of unintentional camera movement.

22. The method of claim 21 wherein determining if the aligned images indicate the occurrence of unintentional camera movement comprises determining an image difference of the aligned images.

23. The method of claim 22 further comprising generating a histogram of the image difference of the aligned images and determining whether unintentional camera movement has occurred based upon identifying a maximum peak in the histogram and a location of the maximum peak.

24. The method of claim 23 wherein when the maximum peak is not substantially centered on zero, unintentional motion is determined to have occurred and wherein determination of said stabilizing adjustment includes identifying adjustments that minimize the image difference.

25. A method of stabilizing a video image, said method comprising:  
intentionally varying a field of view of a video camera by use of control signals;  
capturing a plurality of images with the camera, each of the images being associated with a field of view;  
displaying a selected portion of each of the plurality of images; and  
adjusting the selected portion that is displayed for at least one of the plurality of images, said adjusting step compensating for inadvertent movement of the video camera and being based upon an intended field of view of the camera and an analysis of the at least one of the plurality of images and a second one of the images.